SEQUENCE LISTING

<110> University of Medicine and Dentistry of New Jersey

<120> NOVEL PHARMACOPHORE FOR THE DISCOVERY AND TESTING OF NA, K-ATPASE INHIBITOR COMPOSITIONS AND METHODS FOR THEIR USE IN TREATING CARDIOVASCULAR DISEASES AND CONDITIONS

<130> 54704.8061.WO00

<150> 60/425,037
<151> 2002-11-07

<160> 2

<170> PatentIn version 3.2

<210> 1
<211> 1001
<212> PRT
<213> Homo sapiens

<400> 1

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Gly Val Ser Glu Thr Thr Gly Leu Thr Pro Asp Gln Val Lys Arg His
20 25 30

Leu Glu Lys Tyr Gly His Asn Glu Leu Pro Ala Glu Glu Gly Lys Ser
35 40 45

Leu Trp Glu Leu Val Ile Glu Gln Phe Glu Asp Leu Leu Val Arg Ile
50 55 60

Leu Leu Leu Ala Ala Cys Ile Ser Phe Val Leu Ala Trp Phe Glu Glu
65 70 75 80

Gly Glu Glu Thr Ile Thr Ala Phe Val Glu Pro Phe Val Ile Leu Leu
85 90 95

Ile Leu Ile Ala Asn Ala Ile Val Gly Val Trp Gln Glu Arg Asn Ala
100 105 110

Glu Asn Ala Ile Glu Ala Leu Lys Glu Tyr Glu Pro Glu Met Gly Lys
115 120 125

Val Tyr Arg Ala Asp Arg Lys Ser Val Gln Arg Ile Lys Ala Arg Asp
130 135 140

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Ile Val Pro Gly Asp Ile Val Glu Val Ala Val Gly Asp Lys Val Pro
145                 150                 155                 160

Ala Asp Ile Arg Ile Leu Ser Ile Lys Ser Thr Thr Leu Arg Val Asp
                165                 170                 175

Gln Ser Ile Leu Thr Gly Glu Ser Val Ser Val Ile Lys His Thr Glu
            180                 185                 190

Pro Val Pro Asp Pro Arg Ala Val Asn Gln Asp Lys Lys Asn Met Leu
        195                 200                 205

Phe Ser Gly Thr Asn Ile Ala Ala Gly Lys Ala Leu Gly Ile Val Ala
    210                 215                 220

Thr Thr Gly Val Ser Thr Glu Ile Gly Lys Ile Arg Asp Gln Met Ala
225                 230                 235                 240

Ala Thr Glu Gln Asp Lys Thr Pro Leu Gln Gln Lys Leu Asp Glu Phe
                245                 250                 255

Gly Glu Gln Leu Ser Lys Val Ile Ser Leu Ile Cys Val Ala Val Trp
            260                 265                 270

Leu Ile Asn Ile Gly His Phe Asn Asp Pro Val His Gly Gly Ser Trp
        275                 280                 285

Ile Arg Gly Ala Ile Tyr Tyr Phe Lys Ile Ala Val Ala Leu Ala Val
    290                 295                 300

Ala Ala Ile Pro Glu Gly Leu Pro Ala Val Ile Thr Thr Cys Leu Ala
305                 310                 315                 320

Leu Gly Thr Arg Arg Met Ala Lys Lys Asn Ala Ile Val Arg Ser Leu
                325                 330                 335

Pro Ser Val Glu Thr Leu Gly Cys Thr Ser Val Ile Cys Ser Asp Lys
            340                 345                 350

Thr Gly Thr Leu Thr Thr Asn Gln Met Ser Val Cys Lys Met Phe Ile
        355                 360                 365

Ile Asp Lys Val Asp Gly Asp Phe Cys Ser Leu Asn Glu Phe Ser Ile
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Thr Gly Ser Thr Tyr Ala Pro Glu Gly Glu Val Leu Lys Asn Asp Lys
385                 390                 395                 400

Pro Ile Arg Ser Gly Gln Phe Asp Gly Leu Val Glu Leu Ala Thr Ile
                405                 410                 415

Cys Ala Leu Cys Asn Asp Ser Ser Leu Asp Phe Asn Glu Thr Lys Gly
            420                 425                 430

Val Tyr Glu Lys Val Gly Glu Ala Thr Glu Thr Ala Leu Thr Thr Leu
        435                 440                 445

Val Glu Lys Met Asn Val Phe Asn Thr Glu Val Arg Asn Leu Ser Lys
    450                 455                 460

Val Glu Arg Ala Asn Ala Cys Asn Ser Val Ile Arg Gln Leu Met Lys
465                 470                 475                 480

Lys Glu Phe Thr Leu Glu Phe Ser Arg Asp Arg Lys Ser Met Ser Val
                485                 490                 495

Tyr Cys Ser Pro Ala Lys Ser Ser Arg Ala Ala Val Gly Asn Lys Met
            500                 505                 510

Phe Val Lys Gly Ala Pro Glu Gly Val Ile Asp Arg Cys Asn Tyr Val
        515                 520                 525

Arg Val Gly Thr Thr Arg Val Pro Met Thr Gly Pro Val Lys Glu Lys
    530                 535                 540

Ile Leu Ser Val Ile Lys Glu Trp Gly Thr Gly Arg Asp Thr Leu Arg
545                 550                 555                 560

Cys Leu Ala Leu Ala Thr Arg Asp Thr Pro Pro Lys Arg Glu Glu Met
                565                 570                 575

Val Leu Asp Asp Ser Ser Arg Phe Met Glu Tyr Glu Thr Asp Leu Thr
            580                 585                 590

Phe Val Gly Val Val Gly Met Leu Asp Pro Pro Arg Lys Glu Val Met
        595                 600                 605

Gly Ser Ile Gln Leu Cys Arg Asp Ala Gly Ile Arg Val Ile Met Ile
    610                 615                 620
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Thr Gly Asp Asn Lys Gly Thr Ala Ile Ala Ile Cys Arg Arg Ile Gly
625                 630                 635                 640

Ile Phe Gly Glu Asn Glu Glu Val Ala Asp Arg Ala Tyr Thr Gly Arg
                645                 650                 655

Glu Phe Asp Asp Leu Pro Leu Ala Glu Gln Arg Glu Ala Cys Arg Arg
            660                 665                 670

Ala Cys Cys Phe Ala Arg Val Glu Pro Ser His Lys Ser Lys Ile Val
        675                 680                 685

Glu Tyr Leu Gln Ser Tyr Asp Glu Ile Thr Ala Met Thr Gly Asp Gly
    690                 695                 700

Val Asn Asp Ala Pro Ala Leu Lys Lys Ala Glu Ile Gly Ile Ala Met
705                 710                 715                 720

Gly Ser Gly Thr Ala Val Ala Lys Thr Ala Ser Glu Met Val Leu Ala
                725                 730                 735

Asp Asp Asn Phe Ser Thr Ile Val Ala Ala Val Glu Glu Gly Arg Ala
            740                 745                 750

Ile Tyr Asn Asn Met Lys Gln Phe Ile Arg Tyr Leu Ile Ser Ser Asn
        755                 760                 765

Val Gly Glu Val Val Cys Ile Phe Leu Thr Ala Ala Leu Gly Leu Pro
    770                 775                 780

Glu Ala Leu Ile Pro Val Gln Leu Leu Trp Val Asn Leu Val Thr Asp
785                 790                 795                 800

Gly Leu Pro Ala Thr Ala Leu Gly Phe Asn Pro Pro Asp Leu Asp Ile
                805                 810                 815

Met Asp Arg Pro Pro Arg Ser Pro Lys Glu Pro Leu Ile Ser Gly Trp
            820                 825                 830

Leu Phe Phe Arg Tyr Met Ala Ile Gly Gly Tyr Val Gly Ala Ala Thr
        835                 840                 845

Val Gly Ala Ala Ala Trp Trp Phe Met Tyr Ala Glu Asp Gly Pro Gly
    850                 855                 860
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Val Thr Tyr His Gln Leu Thr His Phe Met Gln Cys Thr Glu Asp His
865                 870                 875                 880

Pro His Phe Glu Gly Leu Asp Cys Glu Ile Phe Glu Ala Pro Glu Pro
                885                 890                 895

Met Thr Met Ala Leu Ser Val Leu Val Thr Ile Glu Met Cys Asn Ala
            900                 905                 910

Leu Asn Ser Leu Ser Glu Asn Gln Ser Leu Met Arg Met Pro Pro Trp
        915                 920                 925

Val Asn Ile Trp Leu Leu Gly Ser Ile Cys Leu Ser Met Ser Leu His
    930                 935                 940

Phe Leu Ile Leu Tyr Val Asp Pro Leu Pro Met Ile Phe Lys Leu Lys
945                 950                 955                 960

Ala Leu Asp Leu Thr Gln Trp Leu Met Val Leu Lys Ile Ser Leu Pro
                965                 970                 975

Val Ile Gly Leu Asp Glu Ile Leu Lys Phe Ile Ala Arg Asn Tyr Leu
            980                 985                 990

Glu Asp Pro Glu Asp Glu Arg Arg  Lys
        995                 1000
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<211> 1016
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            20                  25                  30

Ser Met Asp Asp His Lys Leu Ser Leu Asp Glu Leu His Arg Lys Tyr
        35                  40                  45

Gly Thr Asp Leu Asn Arg Gly Leu Thr Thr Ala Arg Ala Ala Glu Ile
    50                  55                  60
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Leu Ala Arg Asp Gly Pro Asn Ala Leu Thr Pro Pro Pro Thr Thr Pro
65                  70                  75                  80

Glu Trp Val Lys Phe Cys Arg Gln Leu Phe Gly Gly Phe Ser Met Leu
                85                  90                  95

Leu Trp Ile Gly Ala Val Leu Cys Phe Leu Ala Tyr Gly Ile Gln Ala
            100                 105                 110

Ala Thr Glu Glu Glu Pro Gln Asn Asp Asn Leu Tyr Leu Gly Val Val
        115                 120                 125

Leu Ser Ala Val Val Ile Ile Thr Gly Cys Phe Ser Tyr Tyr Gln Glu
    130                 135                 140

Ala Lys Ser Ser Lys Ile Met Glu Ser Phe Lys Asn Met Val Pro Gln
145                 150                 155                 160

Gln Ala Leu Val Ile Arg Asn Gly Glu Lys Met Ser Ile Asn Ala Glu
                165                 170                 175

Glu Val Val Val Gly Asp Leu Val Glu Val Lys Gly Gly Asp Arg Ile
            180                 185                 190

Pro Ala Asp Leu Arg Ile Ile Ser Ala Asn Gly Cys Lys Val Asp Asn
        195                 200                 205

Ser Ser Leu Thr Gly Glu Ser Glu Pro Gln Thr Arg Ser Pro Asp Phe
    210                 215                 220

Thr Asn Glu Asn Pro Leu Glu Thr Arg Asn Ile Ala Phe Phe Ser Thr
225                 230                 235                 240

Asn Cys Val Glu Gly Thr Ala Arg Gly Ile Val Val Tyr Thr Gly Asp
                245                 250                 255

Arg Thr Val Met Gly Arg Ile Ala Thr Leu Ala Ser Gly Leu Glu Gly
            260                 265                 270

Gly Gln Thr Pro Ile Ala Ala Glu Ile Glu His Phe Ile His Ile Ile
        275                 280                 285

Thr Gly Val Ala Val Phe Leu Gly Val Ser Phe Phe Ile Leu Ser Leu
    290                 295                 300
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Ile Leu Glu Tyr Thr Trp Leu Glu Ala Val Ile Phe Leu Ile Gly Ile
305                 310                 315                 320

Ile Val Ala Asn Val Pro Glu Gly Leu Leu Ala Thr Val Thr Val Cys
                325                 330                 335

Leu Thr Leu Thr Ala Lys Arg Met Ala Arg Lys Asn Cys Leu Val Lys
            340                 345                 350

Asn Leu Glu Ala Val Glu Thr Leu Gly Ser Thr Ser Thr Ile Cys Ser
        355                 360                 365

Asp Lys Thr Gly Thr Leu Thr Gln Asn Arg Met Thr Val Ala His Met
    370                 375                 380

Trp Phe Asp Asn Gln Ile His Glu Ala Asp Thr Thr Glu Asn Gln Ser
385                 390                 395                 400

Gly Val Ser Phe Asp Lys Thr Ser Ala Thr Trp Leu Ala Leu Ser Arg
                405                 410                 415

Ile Ala Gly Leu Cys Asn Arg Ala Val Phe Gln Ala Asn Gln Asp Asn
            420                 425                 430

Leu Pro Ile Leu Lys Arg Ala Val Ala Gly Asp Ala Ser Glu Ser Ala
        435                 440                 445

Leu Leu Lys Cys Ile Glu Val Cys Cys Gly Ser Val Lys Glu Met Arg
    450                 455                 460

Glu Arg Tyr Ala Lys Ile Val Glu Ile Pro Phe Asn Ser Thr Asn Lys
465                 470                 475                 480

Tyr Gln Leu Ser Ile His Lys Asn Ala Asn Ala Gly Glu Pro Arg His
                485                 490                 495

Leu Leu Val Met Lys Gly Ala Pro Glu Arg Ile Leu Asp Arg Cys Ser
            500                 505                 510

Ser Ile Leu Ile His Gly Lys Glu Gln Pro Leu Asp Glu Glu Leu Lys
        515                 520                 525

Asp Ala Phe Gln Asn Ala Tyr Leu Glu Leu Gly Gly Leu Gly Glu Arg
    530                 535                 540
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Val Leu Gly Phe Cys His Leu Met Leu Pro Asp Glu Gln Phe Pro Glu
545                 550                 555                 560

Gly Phe Gln Phe Asp Thr Asp Asp Val Asn Phe Pro Val Asp Asn Leu
                565                 570                 575

Cys Phe Val Gly Leu Ile Ser Met Ile Asp Pro Pro Arg Ala Ala Val
            580                 585                 590

Pro Asp Ala Val Gly Lys Cys Arg Ser Ala Gly Ile Lys Val Ile Met
        595                 600                 605

Val Thr Gly Asp His Pro Ile Thr Ala Lys Ala Ile Ala Lys Gly Val
    610                 615                 620

Gly Ile Ile Ser Glu Gly Asn Glu Thr Val Glu Asp Ile Ala Ala Arg
625                 630                 635                 640

Leu Asn Ile Pro Val Ser Gln Val Asn Pro Arg Asp Ala Arg Ala Cys
                645                 650                 655

Val Val His Gly Ser Asp Leu Lys Asp Met Thr Pro Glu Gln Leu Asp
            660                 665                 670

Asp Ile Leu Lys Tyr His Thr Glu Ile Val Phe Ala Arg Thr Ser Pro
        675                 680                 685

Gln Gln Lys Leu Ile Ile Val Glu Gly Cys Gln Arg Gln Gly Ala Ile
    690                 695                 700

Val Ala Val Thr Gly Asp Gly Val Asn Asp Ser Pro Ala Leu Lys Lys
705                 710                 715                 720

Ala Asp Ile Gly Val Ala Met Gly Ile Ala Gly Ser Asp Val Ser Lys
                725                 730                 735

Gln Ala Ala Asp Met Ile Leu Leu Asp Asp Asn Phe Ala Ser Ile Val
            740                 745                 750

Thr Gly Val Glu Glu Gly Arg Leu Ile Phe Asp Asn Leu Lys Lys Ser
        755                 760                 765

Ile Ala Tyr Thr Leu Thr Ser Asn Ile Pro Glu Ile Thr Pro Phe Leu
    770                 775                 780
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Ile Phe Ile Ile Ala Asn Ile Pro Leu Pro Leu Gly Thr Val Thr Ile
785                 790                 795                 800

Leu Cys Ile Asp Leu Gly Thr Asp Met Val Pro Ala Ile Ser Leu Ala
                805                 810                 815

Tyr Glu Gln Ala Glu Ser Asp Ile Met Lys Arg Gln Pro Arg Asn Pro
            820                 825                 830

Gln Thr Asp Lys Leu Val Asn Glu Arg Leu Ile Ser Met Ala Tyr Gly
        835                 840                 845

Gln Ile Gly Met Ile Gln Ala Leu Gly Gly Phe Phe Thr Tyr Phe Val
    850                 855                 860

Ile Met Ala Glu Asn Gly Phe Leu Pro Asn His Leu Leu Gly Ile Arg
865                 870                 875                 880

Val Thr Trp Asp Asp Arg Trp Ile Asn Asp Val Glu Asp Ser Tyr Gly
                885                 890                 895

Gln Gln Trp Thr Tyr Glu Gln Arg Lys Ile Val Glu Phe Thr Cys His
            900                 905                 910

Thr Ala Phe Phe Val Ser Ile Val Val Val Gln Trp Ala Asp Leu Val
        915                 920                 925

Ile Cys Lys Thr Arg Arg Asn Ser Val Phe Gln Gln Gly Met Lys Asn
    930                 935                 940

Lys Ile Leu Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe
945                 950                 955                 960

Leu Ser Tyr Cys Pro Gly Met Gly Val Ala Leu Arg Met Tyr Pro Leu
                965                 970                 975

Lys Pro Thr Trp Trp Phe Cys Ala Phe Pro Tyr Ser Leu Leu Ile Phe
            980                 985                 990

Val Tyr Asp Glu Val Arg Lys Leu  Ile Ile Arg Arg Arg  Pro Gly Gly
        995                 1000                1005

Trp Val  Glu Lys Glu Thr Tyr  Tyr
    1010                1015
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